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WOUNDED ON SHIPBOARD

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U. S. Navy.



Reprint from

The **MILITARY SURGEON**

WASHINGTON, D. C.:

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THE CARE AND THE REMOVAL OF SICK AND WOUNDED ON SHIPBOARD DURING AND AFTER AN ACTION.*

By MEDICAL INSPECTOR H. G. BEYER, U. S. N.

GENTLEMEN: A very able lecture on the subject of "Wounded in Battle on Shipboard," was delivered at this college last year by Surgeon E. S. Bogert, U. S. N.† Since that time, several important additions to the literature have appeared in several foreign medical journals on the same subject, to which I deem it very desirable that your attention should be called. It appears that the more we study the important bearing which a prompt and careful removal and treatment of our wounded in battle has, even from a purely military and naval point of view, the greater also it becomes. It is indeed to this particular side of the subject to which my remarks will be limited.

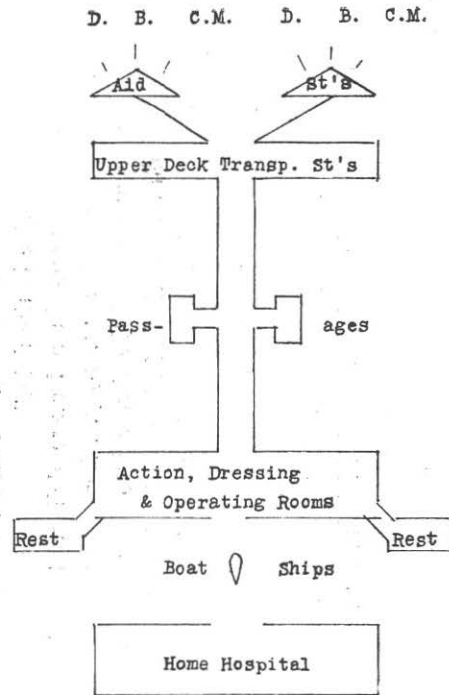
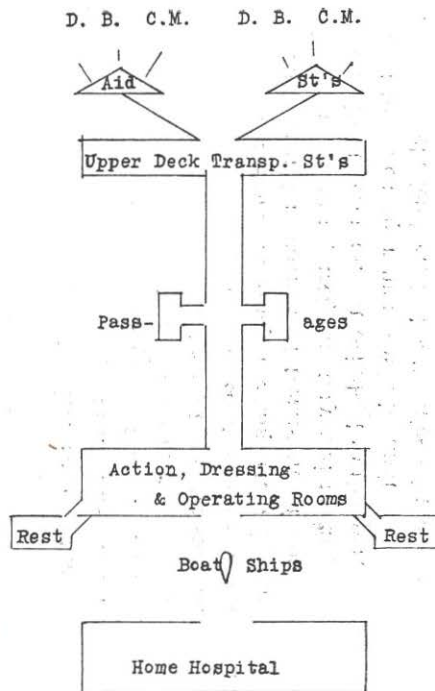
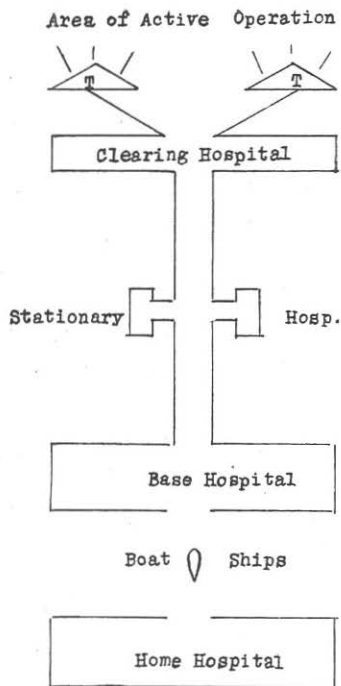
Baron von Schellendorf, in his "Duties of the General Staff," states that "the system of evacuating the sick forms the basis of the entire medical service in the field."

Lieut. Col. Macpherson,‡ in a lecture delivered at the staff college, Camberly, December 14, 1907, after dividing the work of the medical department of the Army into four sections, puts special emphasis on that section of his classification which is concerned with the removal of the sick and wounded, stating that, to the staff officer, the evacuation of the sick and wounded is perhaps the most important of all the functions of the medical service in the field, and that failure to realize this fundamental principle has led, among other things, to the so-called medical scandals of

*Delivered at the Naval War College, Newport, R. I., July, 1909, (Lecture II).

†Bogert, E. S., Surgeon, U. S. N., "Wounded in Battle on Shipboard," Archives, Naval War College, Session, 1908.

‡Macpherson, W. G., Lieut.-Col., R. A. M. C., "The removal of the sick and wounded from the battlefield," JI. of the Royal Army Medical Corps, Jan., 1909, p. 78.



war." "An administrative and general staff should understand and appreciate the organization by which the removal can be accomplished most effectively." Similar, if not identical, remarks with reference to the naval service have been made by Pasquale,* and Suzuki, as well as many others, after a careful study of the subject.

The most eloquent story comes to us in the form of figures furnished us by Surgeon General Suzuki after the war was over. He reported that 82.07 per cent of all their wounded were returned to their stations and resumed their positions on fighting ships, either during the same or a subsequent battle, and that of these 51.86 per cent did so from treatment received on their own ships and 30.21 per cent from treatment received at hospitals. Assuming, for the sake of giving a more concrete illustration by figures, that the Japanese naval forces numbered 20,000 men, their total casualties (15.86 per cent) were 3,130. Of this number 1,627 were recovered by treatment on board their own ships and 939 more by treatment at their hospitals, making 2,566 recoveries in all, while the war was still in progress; a number equal to manning three battleships with trained men!

What this means becomes at once apparent when we stop to realize the sudden rise in value of a single useful life on board ship on the declaration of war, the scarcity of trained men, and the familiar fact that, without men, there can be no shooting. Here is also the principal *military* reason why a naval sanitary service should be well organized. We should not only try to do as well as the Japanese, but we should try to improve upon their figures by improving our methods.

That the sanitary service on board Japanese ships was well organized, we derive without difficulty from the report of Surgeon General Suzuki, in which he reports the delightful fact that the number of their injured never exceeded the limits provided for their comfort below. When we, moreover, take into consideration that, although victorious, there were 120 injured on the flagship Mikasa alone, the provisions on board that ship must have been very liberal and the sanitary service excellent.

That the sanitary service on board the Russian ships was not good, we may derive from reading Seminoff's description of the piles of dead and wounded lying about the decks of their ships and that some of them were actually thrown overboard "to pre-

*Pasquale, Alessandro, Col. Med. nella Regia Marina. "Organization of the Sanitary Service and the principles upon which should be based the aid to the wounded in Naval warfare." *Annali di Medicina Navale e Coloniale*, Vol. II, fasc. V, 1908, p. 601.

vent the disastrous effect on the morale of those left uninjured." While, then, we have ample proof that, on the Japanese side, the wounded were promptly removed and successfully treated, on the Russian side, they were left where they dropped and were thus lost forever. The moral effect of such conditions on those that remained alive is now a matter of history.

While some of us, no doubt, may have been carried away by a temporary enthusiasm, aroused within us, at their wonderful work and given the Japanese more credit than they actually deserved, others seem, on the other hand, a little too prone to question the reliability of their statistical returns, upon which our deductions, nevertheless, must be based. Thus, we find in the last lecture, delivered on this subject, at this college last year, the absolute reliability of certain figures questioned, for apparently very good reasons. The official reports with regard to the number of wounded on the Mikasa gives that number a value of 63, while the reports from another equally official source state that number as having been 120. How is this difference to be reconciled? Convinced that neither side was trying to make a false report and, after some research for the cause of the discrepancy, I believe it may be found in the following considerations: The official reports which state the number of wounded on the Mikasa as 63 are reports from hospitals; the reports that state the number of wounded on the Mikasa as having been 120 are reports made immediately after the battle of Tsushima, and are therefore ships' reports. This conclusion is based upon the calculation, that 51.86 per cent of all the wounded never left their ships but joined their comrades in the fight after having been treated on board. Upon a little further calculation I find that after deducting 63 from 120 we obtain the number 57, and this number is about 48 per cent of 120, a percentage quite near enough to 51.86, the general average, derived from all the ships, to satisfy any one of the fact that this is the actual cause of the differences in the two reports. The resulting difference in the figures is, therefore, merely apparent and satisfactorily explained.

THE SANITARY SERVICES OF THE ARMY AND NAVY, DURING ACTIVE OPERATIONS, COMPARED.

After a rather careful study of the work of the medical and sanitary service in the British Army, in the paper by Lieutenant Colonel Macpherson (*Loc. cit.*), its various divisions into zones of field work and links connecting them, we cannot help arriving

at the conclusion that there is much that is identical in the sanitary work of both Army and Navy, both with regard to the aims and the means by which they may be accomplished (see chart). Leaving aside, for a moment, the technical details of the medical work to be done in the different zones and at the various connecting links between them and considering merely the broad principles and skeletal outlines of the system itself, we may almost without a single change, transfer all these to the field of operations of the sanitary service of the Navy, during war, whether it concerns a single ship or a whole fleet in action. Thus, beginning with the three zones, the collecting zone, the evacuating zone, the distributing zone, with their two connecting links, the clearing hospitals and the stationary hospitals, as forming a complete field-cycle within which the whole work can be accomplished, we may apply the principles of the system either to a single ship or to an entire fleet in action.

Taking, first, a single ship in action and, keeping in mind the particular function of each one of the five parts of the cycle of the Army service in the field, we would, accordingly, have to place the *collecting zone* in ships on the different gundecks and bridges and other exposed parts. The *clearing hospital* would include the corresponding sheltered first-aid and transport stations, near the fore and after lowering hatches on one of the upper decks, the *evacuating zone* would become the vertical hatch with the lower deck passages, leading from the sheltered first-aid and transport stations to the action dressing room and the latter, that is, the action dressing stations, would, with their adjoining rest or recovery rooms, take, from necessity, the place of both the stationary and general hospital all in one of the Army in the field, for the time being. The *distributing zone* could not be realized in a single ship.

Taking, next, a whole fleet in action and translating the activity of the medical department of the fleet, during an action, into terms of the Army system, we could, without serious alterations, give each point in the cycle a somewhat broader sphere. The collecting zone would practically remain the same; the sheltered first-aid and transport stations, near hatches, would more nearly correspond to the area of the work done by tent divisions of field units; the passage between transport stations and action dressing stations would, then, correspond to the class of work done by ambulance and stretcher squads, carrying the wounded from the field of active operations to the clearing hospitals. In

addition, we would have the evacuating zone represented by small boats, carrying the permanently disabled to a hospital or ambulance ship, itself forming the temporary base of the distributing zone, leading to the general naval hospitals at home ports, as the final destination of the sick and wounded and, thus, completing the larger and more complete cycle of the sanitary work to be accomplished in a fleet in action. And, just as important as it is for an army in the field, that the machinery should work perfectly and that there should be no clogging in any part of the system, just so is it for a fleet in action.

We see, therefore, in this simple comparison, used merely for pedagogical reasons, a singular and most striking agreement as regards the main points in the two systems and the chief purposes to be fulfilled and accomplished at those points, by the sanitary officers of the two services, when in active service, and whether in the field or on the high seas.

It cannot here be my purpose to go into a lengthy description of the numerous technical and purely medical details of the work to be done at the different points of the system, and I must absolutely limit myself to the broadest possible outlines and the points of contact with other departments at which the work, in order to be accomplished without friction, is in need of tolerance, if not of intelligent coöperation.

But this, I hope, I have made clear to you, namely, that, aside from all humanitarian considerations, the prompt and efficient removal of the injured from the decks of a fighting ship and in action against the enemy, is one of the important considerations that must influence for either good or bad the outcome of it, and it becomes clearly the duty of the medical department of the Navy to relieve commanding officers of that part of their responsibility in an action.

When we take into closer consideration that this importance is derived solely from considerations of the military effectiveness of an army in the field and not from any reasons of the humanitarian character of the work, we ought, perhaps, realize, as we never did before, what an efficient removal of the sick and wounded in future battles will mean and how much it will contribute to the fighting efficiency of armed forces whether on land or on sea.

To a naval surgeon, accustomed to work within the restricted area of a single ship, the first sight of the elaborate preparations for the removal of the sick and wounded in the rear of an army

in the field must come as a positive surprise. The army of litter bearers, ambulance men, the immense park of ambulance- and hospital supply wagons with their horses, the large number of trainmen at work on ambulance trains and engaged in the laying of light field railways on the lines of communication for the prompt despatch of the wounded in the direction of the base hospitals, all of which are found in the rear of an advancing army in the form of mobile units, must lead him to infer the immense importance attached to the functions of the sanitary service in the field, from the large amount of labor and expense alone that are devoted to them. Both from my recent experience as Fleet Surgeon and from a study of the subject on board the ships of our fleet and a perusal of the literature of the same subject as regards foreign navies, I am led to the inevitable conclusion that the elaboration of an effective system for the removal of the sick and wounded from the area of active operations in the Navy, is considerably behind the Army, mainly, as I believe, for the reason that it is not generally recognized and more commonly known, how important a subject it has come to be.

This applies not only to naval officers generally, but also to some of the medical officers themselves.

Why is it, then, it might be asked, that the great importance and necessity of the work to be done in the medical departments of the two services should be so much better appreciated by the General Staff of an Army than is the removal of the wounded from the decks of ships in action by the officers of the Navy?

The answer to this is not hard to find. It can only be because that most strenuous of all teachers and task-masters, "experience," has long since taught army officers what naval officers still have to learn.

The number of battles fought to a finish on land is so very much greater than that of the battles fought out between ships at sea, that, what has long since become a hard, fast and well established factor in battle organization in armies, always to be reckoned with, is still an imperfectly known quantity in fleet organization on the high seas.

Since, in principle at least, we must assume that the prompt removal of the sick and wounded from the decks of fighting ships, although seemingly less complicated, certainly less expensive, than on the field of battle, is at least of equal importance to the efficiency of a ship or fleet in action, as it is to the efficiency of an army in the field, my plea would be for us, as naval officers, to accept, without further hesitation, this one great lesson, without waiting

for the more expensive demonstration, involved in actual experience, to specially impress it anew upon us. If the art of war consists in trying to get as many of the chances as possible in your favor and if, moreover, a great success is often only the direct consequence of a remembrance, I should be inclined to point to the great necessity of *remembering* that the prompt and careful removal and treatment of the wounded is a matter of *long preparation and drill*. It is the duty of the medical department of the Navy to do this work, the responsibility for doing it effectively will remain with the commander-in-chief of the fleet.

THE CALCULATION OF MATERIAL AND TIME REQUIRED FOR REMOVAL OF THE SICK AND WOUNDED.

It may become desirable or even necessary, both before and after an action, to remove the sick and wounded. Before an action, a certain number of sick encumbering the ship's hospital must be sent ashore or on board an ambulance ship, preparatory to an action, possibly, within a short time. After a fleet action, the removal of at least the seriously wounded, able to be transported, will always have to be effected.

The question arises, what losses are we to expect and to prepare for. The statistical material in our possession upon which to base our probability calculations is very meager. Most of this material has come to us from the reports of the Russo-Japanese War and is practically summed up in the adjoining table:

TABLE OF CASUALTIES.

Ships.	Approximate number of crew.	Killed.	Seriously wounded	Slightly wounded.	Total.	Per cent. of whole crew injured.
Mikasa - -	800	8	63	57	120	15.0
Rossija - -	1,000	57	150		207	20.7
Gromoboi	1,000	91	279		370	37.0

The figures are too few to base our calculations on for the future. What seems, however, to be plainly shown is that the percentage number of casualties is very much smaller on the ships of the victorious side than it is on those of the defeated side, and the latter is the one that got hit first. The same is true with regard to the character of the injuries inflicted. The most

serious injuries occurred on the defeated ships, as is shown by the ratio of the killed to wounded on the two sides. This would perhaps have been the case even if the removal and treatment on both sides had been equally good, which, however, as we know, was not the case.

The general staff of the Army is in possession of a very much larger and much more valuable statistical material than is the Navy. The number as well as the character of the injuries, likely to occur in the future wars and under the influence of the small caliber projectiles, is very much more accurately known to the officers of the Army than is the number and character of the injuries to be expected from large explosive shells on the deck of ships, to naval surgeons.

"A Japanese naval surgeon has estimated the probability of 25-50 wounded to every large shell bursting on board, of which 10 per cent are killed outright and 30 per cent seriously wounded." (Bogert.)

In the absence of more accurate statistics an average of 20 per cent of casualties has been adopted as a basis for calculation by the navies of civilized countries. A fleet, composed of sixteen battleships and eight armored cruisers would be manned by 21,000 men. Assuming that all the vessels of the fleet should engage in general action, we would be led to expect and prepare for 4,300 wounded. At least 10 per cent of these would be expected to be killed, leaving 3,870 on our hands to be cared for. According to Japanese figures 52 per cent (round numbers) of all their wounded were successfully treated aboard their own ships. With the same good luck and under the employment of the same good methods of removal and care, the 3,870 injured would be reduced by 2,012, and the number to be removed from ships and to be sent to hospitals would be 1,858. It becomes absolutely necessary to remove these men, no matter what was the outcome of the battle and, therefore, both sides will probably be engaged in the same maneuver, at about the same time. The only question is, which of the two sides will be ready first, either for the purpose of reaping the fruits of victory by pursuit or to escape capture by flight. In exceptionally smooth weather the five hospital ships of 6-8,000 tons that would be required to be in readiness to take on board that number of wounded, might come alongside and the transfer could be effected through gunports and from several decks at once. In moderately rough weather, however, small boats would be the only conveyance to be thought of and the question will then come up as to how many of such boats would

be required and what would be the time consumed in the maneuver. The number of boats available and the allowable time may both be limited.

It may, under these circumstances, be convenient to employ certain formulas, in use for the same purpose in the Army (see Macpherson, loc. cit.).

Taking T to represent the time allowed, W the number of sick and wounded, t the time required for boats to make one trip to the hospital ship and return, M the number of boats available, and n the number of patients each boat can carry, we get the following formula:

$M = \frac{W \times t}{T \times n}$ for the *number of boats* required for the transfer of a given number of wounded to the nearest hospital ship, or

$T = \frac{W \times t}{M \times n}$ for the time required with a given number of boats to evacuate a given number of wounded to a hospital ship.

For example, our 1,858 wounded are to be transferred to hospital ships in four hours; how many boats would be required to effect their transfer?

Supposing that our boats can make one round trip in two hours and could accommodate either eight lying down patients or thirty sitting up ones. We assume the boats to be the ordinary sailing launches in tow of steam launches. $\frac{2}{5}$ or 743 of our 1,858 wounded require lying down transport and $\frac{3}{5}$ or 1,115 of them can sit up.

For the lying down cases we would require:

$$M = \frac{743 \times 2}{4 \times 8} = 46.50 \text{ boats.}$$

For sitting up cases we would require:

$$M = \frac{1115 \times 2}{4 \times 30} = 18.63 \text{ boats.}$$

Total number of boats required = 66.

Since, moreover, small boats as well as steam launches belonging to battleships may be scarce after a battle, it would point to the necessity of fitting out hospital ships with an unusually large number of such boats as well as with transport material, as stretchers, etc., only a limited amount of which can be stored on battleships.

This, gentlemen, is but one of the many problems before a well organized and administered medical service that has grown with the growth of our fleet and which claims our most serious attention and consideration.





